Scaling up rural local innovations in the Andes: **supporting** innovators and entrepreneurs

By developing effective local innovations, entrepreneurs in the Andes are successfully taking advantage of emerging opportunities and effectively solving pressing problems.

Nicasio Uñapillco: A technology-based innovator showing fodder processed by one of his inventions in Peru.

In the Andes, local innovators and entrepreneurs address many of the difficulties that affect rural communities by developing effective and practical ways to solve problems. These innovations transform the way things are done, seeking solutions, opportunities or new means.

Many of these innovations that arise from local inventiveness and entrepreneurship, and are the result of combining local and traditional knowledge found in rural populations with "formal" knowledge and technology produced in other contexts, locations, countries and cultures.

However, that the vast majority of them do not extend beyond their local setting.

They remain unknown excluded from formal development initiatives.

A frequently identified characteristic in rural communities in the Andes is the structural weakness of product and services markets, which are fragmented, small and of little value.

In these markets, not enough incentives are generated to allow locally effective innovations to expand spontaneously to a massive scale. In such market conditions, both innovators and rural producers feel that changes and improvements are not worth the effort.

Nicasio's threshing machine, efficiency at low cost.

In Puno, Peru, Nicasio Uñapillco developed a forage threshing machine based on commercially available machines, adapting it to the forage crops found in the Peruvian and Bolivian highlands.

In addition to its technical adaptation, the machine adjusts to common farming practices and to the type of energy available in the area. The machine is designed so that worn pieces can be replaced with locally available mechanical material.

Since the machine is adapted to the forage crops of the region, it produces finer chopping, which greatly increases feed digestibility allowing the animals to get the most out of it. Farmers favor this machine over others because it fits their specific needs, but also because it is efficient.

In the Andes, most of the farming produce is traded in weekly informal marketplaces.

Why effective rural local innovations do not naturally increase their scale?

Access to financial services is also limited. On the one hand, the collateral imposed and the need to formally demonstrate positive financial flows make commercial credits beyond the reach of rural innovators and entrepreneurs in practical terms. On the other hand, even if they can have access to these credits, the cost of credits is high.

In rural settings, access to information and to new technical and business knowledge is inadequate given the state of communications infrastructure (for example, access to Internet) as well as the limited possibilities innovators and entrepreneurs have to interact with their peers and learn about other experiences.

In addition, the rural institutional framework —formal and informal norms, practices and regulations— has structural flaws. For example, local innovators and entrepreneurs face enormous difficulties when it comes to registering their businesses, paying taxes and formalizing their activities, all of which increase the costs and risks of doing business with innovations in a significant manner.

In spite of the difficult conditions they face, innovators and entrepreneurs constantly strive to expand their innovations to larger scales, driven by their own determination to solve the problems of their communities and also by their curiosity, creativity and inventiveness, which are traits of the Andean people.

¿How can the scaling up of rural local innovations be actively supported?

The scaling up of rural local innovations can be fostered in two ways: by improving the **conditions of the context** where they operate and, by providing support to ongoing **processes of scaling up innovations.**

Main constraints faced by rural innovators:

- Weak and fragmented local markets; low-value, small and sporadic demand.
- Complex process to formalize their ventures under rules specifically designed for urban micro-enterprises.
- Legal requirements for the registration and protection of innovations are inappropriate for local rural innovations.
- Limited access to legal and technical advisory services to promote their ventures.
- High capital investment and operating costs.
- Limited access to sources of new knowledge and information.

Improving conditions of the context

Many of the constraints that rural innovators face **are structural.** To remove them, far-reaching changes in the national public policy of Latin American countries are necessary. Although governments in the region have already started implementing fresh policies, they will only produce results in the medium and long term.

However, this does not mean that innovators cannot be supported in their endeavors. On the one hand, it is possible to ensure the access of rural innovators and entrepreneurs to **documentation** that allows them to exercise their civic rights and duties. On the other, it is possible to foster the dissemination and use of innovations through **contest and award** mechanisms.

1. Ensuring access to documentation for the exercise of civic rights and duties

One of the main institutional limitations that rural innovators and entrepreneurs face is the lack of basic documentation that allows them to exercise their civic rights and duties.

Being in possession of an identity document gives them access to basic State services (health, education, communications) and benefits (conditional public transfers, bonuses, pensions).

A piece of good news is that there is a growing awareness on the need of identity documents among rural families. With an identity document, rural innovators and entrepreneurs can open a bank account in the formal financial system, which opens the door to credit services, saving systems and sales and payment systems through the Internet.

Advantages of having a savings account for a rural innovator or entrepreneur in Peru's Andean region:

- Security and privacy in managing family savings, especially the savings women control.
- Control over liquidity and the possibility to use funds in emergency situations.
- Possibility of making and receiving bank transfers.
- Access to credit.
- Access to online payment systems (PayPal).

A Peruvian Andean hillside farmer, supported by an IFAD funded Project. The farmer is writing a cheque to pay for private technical assistance.

2. Implementing contest and award mechanisms to foster rural innovations

Contests and awards are normally used as formal and symbolic ceremonies and also to allocate and distribute investment resources. In addition, contests and awards are mechanisms that can be used to **influence** the decisions of rural actors make concerning the need and benefits of developing

Mrs. Cristina Suaña (second from the left), winner of a nation wide rural community tourism contest, representing her country (Peru) at the International Tourism Fair.

Evidence shows that, beyond the prize awarded, both winners and losers regard the recognition to innovation efforts and the opportunity to learn about other similar experiences as the main qualities of the contests.

Through contest and award mechanisms it is possible to identify local rural innovations —in different development stages— and make them visible, which otherwise go frequently unnoticed. Thus, there is a greater chance that the use and application of these innovations will increase.

In addition, contests and awards send out strong signals about the opportunities to create new ventures, use untapped resources and explore new market opportunities.

Contests become ad-hoc places for knowledge exchange and peer-to-peer learning, doing business and finding inspiring ideas.

Contests can communicate the trends of the most dynamic markets as well as the lines of action of national public policy. Contests can partially substitute the signals that rural markets are not able to send out given their weakness and lack of structure.

Providing direct support to innovators and entrepreneurs

Providing direct support to rural innovators and entrepreneurs is a useful way to take innovations, which have proven to be effective, to larger scales. By providing direct support, the scaling up process grows deeper, builds up and, above all, becomes faster.

Evidence shows that direct support works well with innovations that have developed into working prototypes, have proven to be effective and are starting a scaling up process.

Ideas and innovations that have not yet proven to be effective require another kind of support (for example, research and development) before they can move to the scaling up phase.

Not all innovations found in rural locations have realistic possibilities of receiving support in their scaling up process. In addition, given that resources to support scaling up innovations are always scarce, it is necessary to choose those with greater chances of a successful scaling up outcome.

Criteria to determine whether an innovation has scaling up potential:

The innovation:

- Innovation in the form of effective prototype.
- Technically robust: simple, effective, durable; adapted to the settings where it will be used; preferably uses locally available resources.
- Relative efficiency: it is a comparable or better solution than already available alternatives.
- Interest from the users: there are a number of users who acknowledge that the innovation is robust and efficient.
- Significant derived demand: the innovation generates a solution or takes advantage of an opportunity in a dynamic market demanding changes and improvements.

The innovator:

- Constant innovative capacity.
- Entrepreneurial capacity or willingness to partner with entrepreneurs.
- Thorough understanding of the innovative product or service and of the market it is aimed at.
- Actively engaged and interested in scaling up the innovation; with a scaling up process in progress.

Three practical ways to support scaling up rural innovations are proposed:

1. Combining local knowledge and science in scaling up innovations.
2. Financing the process of scaling up innovations.
3. Helping innovators decide on a good business model.

Good practices to promote the combination of knowledge:

- Go where the action is, in the rural locations.
- Bring the interests and concrete motivations of the participants and actors to the table and identify common interests.
- Share views of the world, opinions and life perspectives not related with the innovation in order to understand the world of the other and develop empathy.
- Negotiate and agree on a formal or informal learning process, where the interests of the parties can be fulfilled.
- Repeated and systematic interaction.

1. Combining science and local knowledge to scale up innovations

Combining knowledge does not occur spontaneously. A middle person is necessary: a "broker" that the different actors trust, and who can therefore bring them together without creating misgivings and who can also generate the conditions for knowledge exchange and use the necessary resources for this exchange to happen.

It is very important to bear in mind that *local knowledge* is not necessarily indigenous, traditional or rural knowledge; it can be practical knowledge developed by any local person.

Likewise, scientific knowledge should not necessarily be basic or recently created science; it can take the shape of techniques already tried and known in other locations or of improved inventions.

NEOLED equipment:

A group of engineering students in Cuzco, with links to the rural life of the region, developed an invention that ensures the treatment of jaundice in rural settings with substandard health services.

The equipment is economical, uses little electricity and there is also a handheld version of it. The researchers studied which LED frequencies can be used for the treatment of jaundice. Then, they talked with local doctors who, with his practical (local) knowledge, helped them design equipment that can be used in rural settings and under local conditions. This is an example of how science and practical knowledge combine to create an effective innovation.

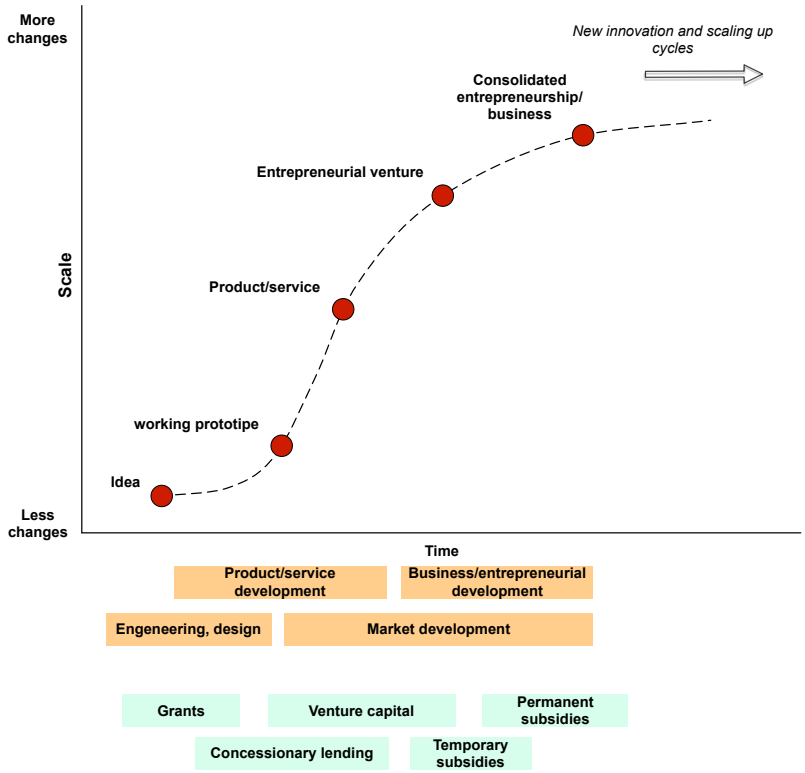
It is also an example of how scientific knowledge can be introduced by indigenous people who are part of formal knowledge systems and also of how practical local knowledge can be brought to the scaling up process by people from the city but linked to rural locations.

2. Financing the process of scaling up rural innovations

Ventures in the early stages of scaling up run the risk of failing because usually there are market and institutional limitations. For this reason, a vast number of inventions, innovative ideas and attractive solutions that have remained **stagnant** at the local scale can be found in rural locations.

To promote the scaling up of rural innovations, it is necessary to help innovators and entrepreneurs in developing their innovations from prototypes until they are transformed into products and services that can compete in local markets and, subsequently, help them to build ventures around these innovations, which over time can become firmly established and sustainable.

Through **grants** in cash or in kind (equipment, inputs, infrastructure), innovators and entrepreneurs in the early stages of scaling up are able to: develop their prototypes and make them more efficient; generate production capacities; invest in the engineering of their products; and count with working capital for the startup stage.



Another effective kind of financial support is **concessionary lending**, which is particularly well suited for ventures in a more advanced stage of the scaling up process. This kind of loan transfers the risk of the investment to the entrepreneur, but on preferential terms that would not be found in the commercial loans market.

This allows entrepreneurs to develop their products or services, try them on the market and make them more efficient. In concessionary lending, the principal is returned within a reasonable period of time and can be reinvested in other scaling up processes.

Innovative ventures, which have already developed a product or service and placed it on the market, can also be financed through **venture capital**. In this case, the investor (public or private) assumes the risk of the venture. Venture capital is temporary in nature. This entails having a divestment plan should the investor, at a given moment, transfer the shares to the innovator or sell them to other investors.

Economic rationale behind the financial support provided to scaling up processes:

The economic rationale behind the financial support provided to scaling up processes, especially if public funds are used, is the following: the sunk costs that weak markets and flawed institutions generate are not transferred equitably to all of the economic operators. Innovators and entrepreneurs –as risk takers– are burdened with the largest part of these costs and, further, the more effective the innovation, the higher the sunk (opportunity) costs they have to bear.

Providing financial support to rural innovators and entrepreneurs generates two public benefits. On the one hand, it is a proportionate compensation to balance the negative effects that innovators and entrepreneurs face in rural locations. On the other, if these innovations scale up and are able to consolidate as enterprises, the multiplier effect that can be produced is big: local job and income generation, thereby contributing to diversifying rural economy and to rural transformation.

Venture capital in rural business innovations:

In the valleys of Chuquisaca, Bolivia, a group of rural farming communities has increased their income in more than 100% by growing high quality organic oregano.

This is the result of an enterprise partnership between farming cooperatives, service providers, business people and donors. Through a venture capital investment made by SOCODEVI and the Valles Foundation, a private company called Spices Business Unit (UNEC, as per its Spanish acronym) was established. This company provides oregano seedlings to farmers, gives them technical assistance, and collects, processes, packs and exports the produce to high value markets in Latin America.

This partnership is not contract-farming. Instead, through their cooperatives and associations, farmers are also shareholders of the company and, therefore, entitled to the company's revenues. This partnership experience is an innovative and effective way to link rural farmers to high value markets and give them access to investment capital as well as to technical

Eco-filter's permanent subsidy:

The Eco-filtro is a simple and effective solution to water quality problems in rural regions that do not have access to safe drinking water. The Eco-filtro is made with local materials, but it requires a certain degree of technology in order to work. Consequently, the unit cost of the Eco-filtro in most of the poor rural regions is greater than the payment capacity of rural families.

To achieve the mass scale use of this innovation in poor rural populations of Latin American and worldwide, the company that developed the Eco-filtro has designed a permanent grant scheme that works: the Eco-filtro is also sold in cities at a higher price than its cost, and the positive difference between revenue and cost subsidizes the cost price of the same Eco-filtro in rural areas. In this way, it becomes affordable to those who need it the most.

Temporary subsidies is another way to finance innovative ventures, particularly those with possibilities to step up to larger scales and become commercially sustainable. In general, it is aimed at partially covering the fixed costs of the operation. The aid decreases gradually until, at a given point, it ends. By that time, it is expected that the venture would have scaled up enough to sustain itself.

Permanent subsidies can be used for highly effective innovations that generate significant changes in terms of their impact on public issues (such as health or food) but, because of their nature, the kind of resources they use, or the production and distribution processes they require, their costs are greater than the actual payment capacity users have. Therefore, they will not be able to become sustainable businesses in contexts with weak and fragmented markets and deficient institutions.

It is also possible to help users gain access to the innovative product or service through purchase incentives: vouchers that cover a certain sum of the product or service, or conditional cash transfers linked to the product's use, among others.

For innovations that generate a public benefit, it is possible to establish a supply subsidy scheme for the innovative product or service to reduce its final cost and make it affordable for the user. This may be achieved, for example, by reducing taxes, subsidizing the cost of raw materials or providing support to the product's distribution through public or charity organizations.

3. Helping innovators decide on a good business model

When providing support to scaling up rural innovations, one of the critical elements is helping entrepreneurs decide on an adequate business model so that their innovative product or service can take full advantage of market forces in order to step to larger scales.

The business model must be adapted to the innovation's nature and also to the economic conditions of the context where it is scaling up. Evidence shows that micro-enterprises or single-person enterprises, which are more flexible and in general have less fixed costs, perform better in weak and fragmented markets compared to larger and more structured enterprises.

Some innovations translate into innovative products or services that, in order to work, require a certain kind of implicit knowledge that cannot be transferred through training manuals.

In such cases, innovators can use a business **franchise model**, in which not the innovator but a third party or enterprise produces or provides the service. To do so, training and very strict terms of quality and processes are supervised, which ensure that the product or service will perform well.

Another business model that works well in Andean markets are **partnerships or alliances with philanthropic entrepreneurs and investors** who are interested in social enterprises or corporate social responsibility. These investors are willing to receive significantly lower financial returns -lower than what the financial market offers them- in exchange for "social" gains that benefit rural populations.

These partnerships usually involve the investor's participation in the enterprise, whether as a venture capital shareholder, a supplier of raw materials or a distributor of the innovative product. A distinctive feature of this kind of support is that the investor has the option to actively contribute to the enterprise with his/her business skills and to help in the development of both the innovator and the enterprise.

The Eco-filtro: franchise for free:

The Eco-filtro has developed a franchise-based business model that works. The Eco-filtro is not patented and may be copied and produced by anyone. However, the production method is complex and requires training.

The company that developed the Eco-filtro produces large quantities of the product, but it has also transferred production knowledge as a franchise available for free to enterprises, NGOs and public entities in different countries. The company that developed the Eco-filtro charges for the training and supervision provided, and also participates actively in the product's adaptation and enhancement processes.

*Rural innovations that have turned into effective products or services with the potential to be commercially viable can be scaled up by establishing **simple ventures**: micro-enterprises or single-person enterprises, which generate, produce and distribute innovative products or services.*

Remarks

- Being aware that the scaling up process is a long-term endeavor is also necessary. Although it is possible to speed up the process by providing direct support, such support must be sustained and systematic over a long period of time in order to achieve significant impacts. This is something that may be difficult to accomplish through short-term project approaches, which are commonly used by donors.

- While the support provided to innovators and entrepreneurs can have positive impacts on the living conditions of rural populations, it is necessary to understand that the failure rate of innovative enterprises is high and not all of the ventures that receive support can be expected to scale up.

- Combining science and local knowledge is a powerful way to support entrepreneurs and innovators in scaling up their innovations. Training workshops or meeting events where researchers give master lectures is not enough; actual face-to-face interaction and ongoing exchange of ideas is needed to effectively "blend" different kinds of knowledge.

- Funding scaling up processes is a potent tool but it can also have adverse effects. Ventures can easily become dependent on this support and cease to develop their own capabilities and skills, which they need to survive under real market conditions. Therefore, this tool should be used wisely and pragmatically. It is necessary to ensure that ventures generate the required capabilities in parallel with subsidies so that they can sustain themselves when such support comes to an end.

- Choosing a good business model, which is well suited to the innovation and the market, is a critical factor in scaling up rural innovations. Often, lack of knowledge about how an enterprise or market operates pushes entrepreneurs to take up inappropriate business models. In light of this, the direct support provided to scaling up processes should include entrepreneurial advice from experts in the field.

This summary is the **second** of a series of three documents that encompass research findings of the Scaling Up Rural Innovations Program, a joint IFAD – IDRC initiative. Contact: alvaro.paz27@gmail.com. More information about the research supported by the Program can be found in www.escalandoinnovacionesrurales.com.

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